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# FOOD NEWS

**FOR CONSUMERS**

Volume 8 Number 3 Holidays 1991

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United States Department of Agriculture  
Food Safety and Inspection Service

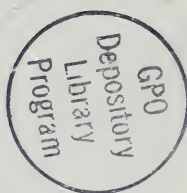
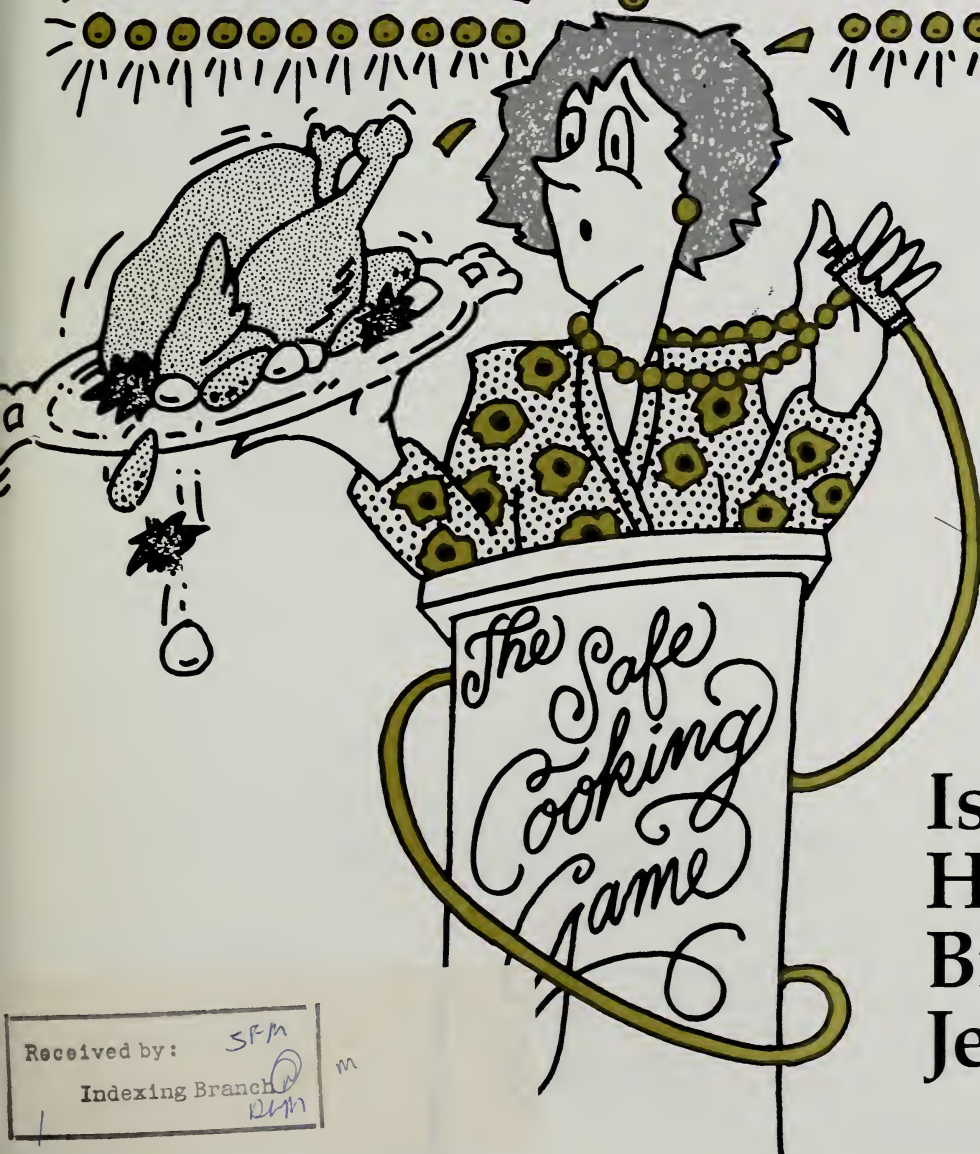
CURRENT SERIAL RECORDS  
APRIL 1991

STORING

THAWING

COOKING

the 'L' word  
LEFTOVERS



**Is Your  
Holiday  
Bird in  
Jeopardy?**

Received by: *SFM*

Indexing Branch *DM*

# FOOD NEWS

FOR CONSUMERS

Holidays 1991  
Vol. 8, No. 3

*Food News for Consumers* is published by USDA's Food Safety and Inspection Service, the agency charged with ensuring the safety, wholesomeness and proper labeling of the nation's meat and poultry supply. The magazine reports how FSIS acts to protect public safety, covering research findings and regulatory efforts important in understanding how the agency works and how consumers can protect themselves against foodborne illness.

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## What FSIS Is Doing to Keep Your Holiday Food Safe

*A Message from FSIS's Deputy Administrator for Inspection Operations, Dr. Wilson S. Horne*

**T**hanksgiving, Christmas, Hanukkah, New Year's...the holiday season is a time for rejoicing, yet a time for care too. Busy families often make food handling mistakes when preparing for large gatherings. This issue of *Food News* has several fine articles to help you through those holiday "trials."

But that's not my focus here. I want to talk about my own area of responsibility which is to oversee the Food Safety and Inspection Service's primary public trust, the inspection of meat and poultry products. It's difficult work because with every technological advance, it seems, come new challenges.

Yet, with justifiable pride, I think I can say we are successfully meeting those challenges.

Some of you may have heard about FSIS's new HACCP initiative. This program—the acronym stands for a Hazard Analysis and Critical Control Point system—is now under development to further protect meat and poultry products. HACCP inspection will intensify FSIS and industry attention on those points in production that are most critical to food safety.

We've just completed cooperative FSIS and industry workshops to develop model HACCP production plans for two classes of product—refrigerated, ready-to-eat foods and cooked sausages (such as hotdogs). A third workshop, to develop a model HACCP plan for poultry products, will be held in Atlanta this August.

In a Puerto Rico study, we've just completed five years of research on salmonella in poultry production. This study traces how salmonella levels vary from the time birds enter the plant until they are packaged to leave. Those results will be released shortly and will be the basis for new salmonella control programs.

Plus, we have some exciting new water-filtration systems ready for in-plant testing. This initiative, intended to improve the microbial quality of water used in plants, will also cut total water use by about half—a major environmental and bacteriological victory!

FSIS is involved in numerous inspection update efforts. We're making every effort to ensure that you and your family enjoy a happy, pleasant holiday season. To that, let me add my personal best wishes.



Dr. Wilson S. Horne, whose veterinary degree is from Washington State University, has made his career at FSIS. Now Deputy Administrator for Inspection Operations, Dr. Horne heads a roughly 8,000-person inspection staff working in about 6,500 plants.



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# Is Your Holiday Turkey in Jeopardy?

by Pat Moriarty, R.D.\* and  
Barbara O'Brien, R.D.

**D**efrosted on the counter, prestuffed, slow-baked, partially cooked, stored whole without carving...? If any of these situations sounds like your usual Thanksgiving dinner preparation plans, you may be putting your turkey in jeopardy.

Over the last six years, USDA's staff on the Meat and Poultry Hotline have faced many challenges trying to save Thanksgiving turkeys that have been prepared in questionable ways. "It's difficult to advise consumers on Thanksgiving Day that the turkey they have worked so hard to serve may not be safe to eat," says Susan Templin Conley, Hotline Manager.

According to Conley, there are six basic problems that Hotline staff members hear every year. Read on to see if you may unknowingly be creating any of these scenarios.



## **MISTAKE 1.**

### **Defrosting at Room Temperature**

"We've always done it that way...There's no room in the refrigerator...We forgot it was in the trunk of the car...It's in a cold basement."

While there are many reasons why consumers find themselves with turkeys defrosted at room temperature, some planned and some unplanned, the result is the same—a potentially unsafe turkey. Bacteria grow rapidly at room temperature. Bacteria will begin to grow on the outside portion

of the bird that defrosts first. These surface bacteria can multiply to dangerously high levels that cooking may not destroy.

## **Instead.**

Plan on 1 day of refrigerator defrost time for every 5 pounds of turkey. A 10-pound turkey will take approximately 2 days to defrost in the refrigerator, a 15-pound turkey 3 days and a 20-pound turkey 4 days.

Some callers worry that a frozen turkey will spoil if left in the refrigerator for 4 days. Don't be concerned. Even after a turkey fully defrosts, it is safe in the refrigerator for an additional 1-2 days.

If you forget to take your turkey out of the freezer early enough, don't panic. You're not in hot water yet, especially if you remember to use the COLD WATER technique. Even a 20-pound frozen turkey can be defrosted in 10 hours using the cold water defrost method. Submerge the wrapped bird in cold water, adding ice or new cold water every 30 minutes.



## **MISTAKE 2.**

### **Prestuffing a Turkey the Night Before**

It's okay to prestuff Christmas stockings, but not Thanksgiving birds! Stuffing a turkey the night before is risky business. The cavity of the bird actually insulates the stuffing from the cold temperatures, and can keep

the stuffing in a temperature range that encourages bacterial growth.

## **Instead.**

Prepare dry stuffing ingredients the day before. Tightly cover and leave at room temperature. The perishables—butter, or margarine, mushrooms, oysters, cooked celery and onion, broth—should be refrigerated. Combine the dry and wet ingredients and stuff the bird immediately before the turkey goes into the oven.



## **MISTAKE 3.**

### **Cooking at Low Temperatures Overnight**

Every year Hotline staff members worry about "how low consumers will go" when it comes to oven temperature settings. On Thanksgiving Day in 1990, Hotline staff talked with numerous families who calmly slept the night away while bacteria were busily multiplying on their turkeys in 200° F ovens. Cooking below 325° F is unsafe because low temperatures permit the bird (and the stuffing) to remain in the "danger zone" (40°-140° F) too long. While in this "zone" bacteria can grow and some produce heat-resistant toxins.

## **Instead.**

Cook perishable foods at an oven temperature no lower than 325° F.

#### ✓ **MISTAKE 4.** **Partially Cooking a Bird** **the Day Before**

Some time-savers are safer than others. Partially cooking a turkey is not one of them. Interrupted cooking can actually increase the possibility of bacterial growth. The turkey may be heated long enough to activate bacterial growth, but not long enough to kill it.

#### **Instead.**

Cook the turkey completely in one operation. Several other ideas for SAFE time saving include: 1) Using oven cooking bags, 2) Baking stuffing separately from the turkey, 3) Cooking and carving the turkey 1 to 2 days before the holiday, and storing it in the refrigerator for reheating on the big day.

#### ✓ **MISTAKE 5.** **Cooking a Turkey Ahead** **of Time and Leaving It Whole** **in the Refrigerator**

Cooking the turkey a day or two before the holiday is fine, but refrigerating the bird whole, without carving, is another form of turkey jeopardy. A cooked turkey, stuffed or unstuffed, is too big and dense to cool down quickly and efficiently in a home refrigerator. In addition, reheating the turkey the next day in a slow oven to prevent drying out could allow even more growth of potential food poisoning bacteria.

#### **Instead.**

Roast the turkey 1 or 2 days before the holiday. Use a meat thermometer to make sure that the bird reaches 180° F. Remove stuffing immediately after taking the bird from the oven. Allow the turkey to sit for 20 to 30 minutes so that the meat juices can settle. Carve the bird into appropriate serving slices. Arrange turkey slices in shallow baking pans. Cover and refrigerate. Reheat Thanksgiving Day in a conventional oven or microwave. Make sure that meat and stuffing are reheated to "steamy hot", 165° F.

#### ✓ **PROBLEM 6.** **Power Failure**

The oven broke down, an ice storm downed power lines, there's no gas for the gas grill. You can't keep your bird hot...or you can't keep your bird cold.

These unplanned situations do arise through the fault of no one. Besides causing anxiety and stress, they can also lead to an unsafe bird.

#### **Solution.**

Time is of the essence. If your bird has been in any of these situations for over 2 hours, your turkey could become risky. After 2 hours the turkey enters the "danger zone" where food poisoning bacteria can multiply rapidly. But to discuss your unique situation, call one of our food experts on the Meat and Poultry Hotline. ■

*\*Registered Dietitian*

USDA's Meat and Poultry Hotline answers questions on the safe storage and handling of meat, poultry and other perishable foods. Normal hours are 10 a.m.-4 p.m. weekdays, Eastern Time. In November the hours will be extended to 9 a.m. to 5 p.m. The Hotline will also be open the weekend before Thanksgiving, Nov. 23 and 24, 9 a.m. to 5 p.m. On Thanksgiving Day, the lines will operate 8 a.m. to 2 p.m. Call 1-800-535-4555. Washington, D.C. area residents call 202-447-3333.





# TURKEY BASICS FROM USDA

## BUYING A TURKEY

### FROZEN

Buy any time but keep frozen until 1-5 days before cooking. (See THAWING A TURKEY)

1 lb. per person

### FROZEN PRE-STUFFED

Buy any time. Keep frozen until ready to cook. DO NOT THAW.

1 1/4 lbs. per person

### FRESH

Buy 1-2 days before cooking. DO NOT BUY PRE-STUFFED.

1 lb. per person

### PRE-COOKED

Serve Immediately within 1-2 hours of removal from oven

1 lb. per person

## THAWING A TURKEY

### THAWING TIME IN THE REFRIGERATOR

(Whole Turkey)

8 to 12 pounds.....1 to 2 Days  
12 to 16 pounds.....2 to 3 Days  
16 to 20 pounds.....3 to 4 Days  
20 to 24 pounds.....4 to 5 Days

### THAWING TIME IN COLD WATER

(Whole Turkey)

8 to 12 pounds.....4 to 6 Hours  
12 to 16 pounds.....6 to 9 Hours  
16 to 20 pounds.....9 to 11 Hours  
20 to 24 pounds.....11 to 12 Hours

### THAWING IN THE MICROWAVE

Check manufacturer's instruction for the size turkey that will fit into your oven, the minutes per pound, and the power level to use for thawing.

After thawing, remove neck and giblets, wash turkey inside and outside with cold water, drain well.

❑ WASH HANDS, UTENSILS, SINK, AND ANYTHING ELSE THAT HAS COME IN CONTACT WITH RAW TURKEY.

## STUFFING A TURKEY

### STUFFING IN THE TURKEY

Mix and stuff ingredients immediately before putting in oven. Stuff lightly. Cooking time takes longer. Allow 3/4 cup stuffing per lb. of turkey.

### STUFFING SEPARATE

If you are in a hurry, bake stuffing in greased, covered casserole during last hour while turkey roasts.

## ROASTING A TURKEY

Timetable for Fresh or Thawed Turkey at 325° F

WEIGHT(pounds)	UNSTUFFED(hours)	STUFFED(hours)
4 to 6 (breast)	1-1/2 to 2-1/4	Not Applicable
6 to 8	2-1/4 to 3-1/4	3 to 3-1/2
8 to 12	3-1/4 to 4	3-1/2 to 4-1/2
12 to 16	4 to 4-1/2	4-1/2 to 5-1/2
16 to 20	4-1/2 to 5	5-1/2 to 6-1/2
20 to 24	5 to 5-1/2	6-1/2 to 7
24 to 28	5-1/2 to 6	7 to 8-1/2

Place turkey breast-side up on a rack in a shallow roasting pan. Insert meat thermometer in thigh. Do not add water. Cover turkey with loose tent of heavy-duty aluminum foil. Remove foil 20-30 minutes before roasting is done. Final temperature for safety and doneness—180° F in thigh; 165° F in stuffing. Juices should be clear not pink.

❑ WHEN TURKEY IS DONE, REMOVE STUFFING. LET BIRD STAND 15 MINUTES FOR BETTER CARVING. THEN SERVE SLICED TURKEY AND STUFFING.

## STORING YOUR LEFTOVERS

Divide turkey into small portions and store in several small containers. Turkey will keep 3-4 days in refrigerator. Use stuffing and gravy within 1-2 days. Reheat leftovers until "steamy hot", 165° F. Bring gravy to rolling boil before serving. For best quality, use frozen turkey, gravy, and stuffing within one month.

## OTHER QUESTIONS ON YOUR HOLIDAY TURKEY

If you have questions about your holiday turkey, call the USDA Meat and Poultry Hotline at 1-800-535-4555.

Hours: Monday-Friday, Nov. 1-30, 9 to 5 EST

Saturday and Sunday, Nov. 23-24, 9 to 5

Thanksgiving Day, Nov. 28, 8 to 2

Monday-Friday, Year Round, 10 to 4



# Does "Tradition" Put Your Family at Risk For Food Poisoning?

by Dianne Durant

**W**hen you look at the faces around your Holiday table, think about this. Nearly one in five of the people you see could face special risks from food poisoning.

**Who?** A lot of people are especially vulnerable to food poisoning. Most of them don't know it. People over 65, pregnant women, infants and people with chronic illnesses all stand a greater chance of getting sick from food poisoning and suffering complications.

But here's the most important part. You can cut those risks, protecting yourself and your family. Most foodborne illness can be prevented by safe food handling.

**Check Out Your Family Traditions.** According to Diane Van on USDA's Meat and Poultry Hotline, one of the riskiest things people do is something

they've seen done for decades—leave the cooked turkey out all day.

"It's on the counter, it's on the table. People pick at it after dinner, and there it sits for hours," said Van.

Unfortunately, while it's sitting there, bacteria are multiplying, doubling every 20 minutes in the right conditions.

"If just one bacterial cell got on the meat after you pulled it out of the oven at 1 o'clock, by 8 that evening you could have over 2 million," Van said.

So here's the food safety rule: Two hours after you pull the cooked bird out of the oven it should be back in the refrigerator. To speed cooling and limit bacterial growth, cut the meat from the bone, remove the stuffing and store both in small, shallow containers.

**Turkey Like Grandma Made.** "For as long as we've been having Thanksgiving, we've been looking for ways to save time with the fixings. Sometimes these old time-savers end up costing us more than time," Van said.

**All-night cooking.** Van reports callers say, "Mom's turkey always cooked all night. We'd wake up in the morning to the smell of roasting turkey."

Van explains, "Overnight cooking is popular when people are having a lot of guests. A big turkey takes a long time to cook. Rather than get up at the crack of dawn, they cook the turkey all night at a low temperature. But it's not safe."

Thorough cooking kills bacteria. But cooking at low temperatures—less than 325° F—has the opposite effect. The



warmth of low heat actually helps bacteria grow.

**But How Do I Get My Turkey Cooked?** According to Van, there are a couple of good alternatives to overnight cooking. Cook two smaller turkeys, or use a cooking bag or covered roasting pan to speed cooking.

"Lots of callers to the Hotline get confused about cooking bags," Van said, "They remember their mother using brown grocery bags. Don't use them for cooking. It's not safe and toxins from the glue in the seams could make you very sick."

**"Eggstra" Cautions.** Because of emerging problems with salmonella bacteria in unbroken eggs, people need to take precautions when preparing food made with eggs, especially some desserts, like pumpkin or custard pies made with eggs.

Foods like custards, containing eggs, milk and a high moisture content, need to be cooked to 160° F or until firm. They must also be refrigerated after cooking—a precaution that's not necessary with most cakes, breads or cookies.

It's also important not to consume raw eggs. Use commercially pasteurized eggnog or make your own eggnog with a cooked custard base, Van said. ■

## For Safe Holiday Food

- Thawing a Frozen Turkey - Don't thaw on the kitchen counter. Thaw in the microwave or refrigerator.
- Snacking - Snacking off the turkey is fine, but don't leave it out more than 2 hours.
- Leftovers - To speed cooling, debone the turkey and refrigerate it in small, shallow containers.
- Cooking - Don't cook turkeys overnight at low temperatures. Cook at 325° F.
- Desserts - Cook custards to 160° F and refrigerate pies made with eggs.
- Eggnog - Don't use a raw egg recipe. Use commercially prepared, pasteurized eggnog or make your own with a cooked custard base.

# What's "Cooking" On Campus?

by Liz Lapping and Nancy Connor

**W**hen students pack up their gear to head off to college, they always take the basics—clothing, a stereo, a computer and maybe a cordless phone to "keep in touch."

But many students are also heading back to school with a small microwave or a toaster-oven to prepare their own food.

The USDA Meat and Poultry Hotline (1-800-535-4555) gets many calls from parents and students with questions about the handling and storage of

dorm foods. Here is a sampling of those questions.

**Q. Our dorm has a kitchen with a microwave on each floor. Often food prepared according to the printed directions is not cooked as thoroughly as I like it. What is wrong?**

**A.** In a large building like a dorm, other electrical equipment such as personal computers, toaster-ovens and stereos can compete for current and reduce the electrical wattage of a microwave.

A "community" oven may also be used more frequently than one at home. An oven that has already cooked several foods will also cook slower than a cold oven.

To compensate, set the oven for the maximum time given in the instructions, or perhaps add several seconds more cooking time.

Cover foods during cooking. Remember to stir or rearrange food, and rotate the dish. If your oven has a temperature probe, use it. Or use a meat thermometer to check internal temperatures after allowing for standing time. The food continues to cook during this period. Remember, red meat should reach 160° F; poultry 180° F. Foods from the microwave should be steaming hot.

A final suggestion is to invest in several microwave cooking dishes with covers. Don't use margarine tubs or other plastic containers as cooking utensils since chemicals used in the plastic could transfer into the foods.

**Q. I am living off campus this year. My two roommates and I will be preparing our own meals. We know how to cook and we plan to buy healthful food. What else do we need to know to make this a successful and fun venture?**

**A.** You sound like you're already off to a good start. Following the simple guidelines below will ensure that your meals are not only healthful, but safe.

When shopping, buy perishable foods last and get them home quickly. Never leave food in a hot car while you run other errands.

## Higher Education For College 'Cooking'

1. When you go grocery shopping, always take perishable food home quickly and refrigerate it within 2 hours. Don't stop by the library or visit a friend until this is done.

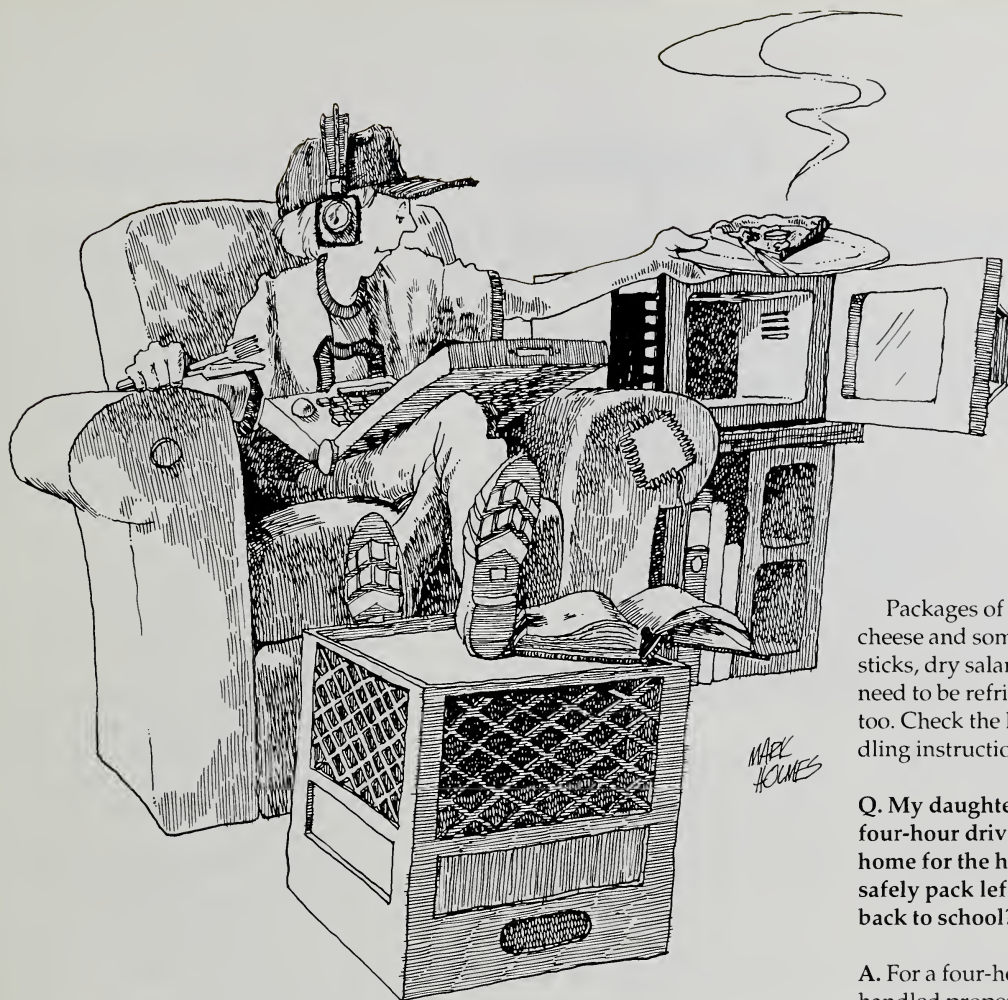
2. When using the microwave, follow product directions and plan for extra cooking time if you're in a dorm. Other equipment can drain current from the electrical circuit.

3. Leftover pizza, fried chicken, Chinese food, and other carry-outs should be refrigerated as soon as possible. Remember that perishable food should never be off refrigeration more than 2 hours.

4. Never store foods on the window ledge even if the weather is cold (not even that pizza box). Buildings radiate heat, making the sill warmer than the outside temperature. Plus, a metal box used to protect food from birds and animals can act as an "oven" in direct sunlight.

5. "Care packages" of food from home are always welcome. But be sure to check any cans or packages to see if they need refrigeration after opening.





Refrigerate perishables as soon as you get home. Freeze any fresh meat, fish or poultry you won't use in the next few days.

Thaw frozen foods in the refrigerator—NOT on the counter. Wash your hands before preparing food. Always use clean dishtowels and sponges.

Wash used cutting board and utensils in hot, soapy water and use a plastic, not wooden, cutting board. Don't allow raw meat or poultry juices to drip on other foods.

Cook food thoroughly. Never partially cook food.

Finally, if you feel food has not been handled safely, throw it out.

**Q. I frequently send "care packages" to my son at college. What other foods besides cookies, crackers and candy can I send?**

**A.** For a change of pace, send a sampling of the new shelf-stable, microwaveable entrees now available in supermarkets. They are not frozen and keep fresh without refrigeration for about 18 months. More than a dozen different entrees are available—from hearty chili, roast beef and lasagna to more exotic linguini with clam sauce. Your son can stack them on the bookcase and use as needed.

Loaf-type cakes, like banana bread, carrot, applesauce or sour cream, ship well if wrapped in aluminum foil and packed in a can or box.

Packages of hard or processed cheese and some sausages like beef sticks, dry salami and pepperoni don't need to be refrigerated. They mail well too. Check the label carefully for handling instructions.

**Q. My daughter's college is only a four-hour drive away so she comes home for the holidays. How can I safely pack leftovers for her to take back to school?**

**A.** For a four-hour drive, food must be handled properly to keep it safe from spoilage and food poisoning bacteria.

The leftover foods should be divided into small, shallow containers and cooled in the refrigerator prior to the trip.

To transport the food, pack a cooler with ice or a freeze-pack insert, and add the cold containers of food from the refrigerator when she's ready to leave. Freezing foods prior to the return trip is also an option.

During the drive, the cooler should be kept in the passenger area of the car. It's much cooler than the trunk. Advise your daughter to refrigerate the food as soon as she arrives at school.

*For answers to other questions about food safety, call the USDA Meat and Poultry Hotline (1-800-535-4555) Mon. through Fri., 10 a.m.-4 p.m. EST. ●*



# Getting Turkeys to the Table

by Barbara O'Brien, R.D.\*

**T**hanksgiving may well be about *abundance*, but for turkey producers and the USDA inspectors charged with certifying the birds, America's devotion to the annual turkey dinner is almost too much of a good thing.

"About 45 million turkeys will be eaten this Thanksgiving," said Teresa Farney of the National Turkey Federation, "which means that 90 percent of Americans, some 225 million people, will sit down to a turkey dinner. Plus, the turkey industry does about 20 percent of its annual business over the Holiday season."

## ***It all started last May.***

To meet the heavy Holiday demand, the industry sets eggs in the incubators in May to allow for hatching, growing time and processing for market. After four weeks, a baby turkey or poult is hatched. At 16 to 19 weeks the bird reaches market weight. What happens then?

Let's "tour" a turkey plant for a quick look at just how the birds get from the farm to your table.

## ***The Inspection Process.***

In October, the Thanksgiving-bound turkeys arrive from the farm at a processing plant where they are examined by a USDA veterinarian for disease. According to Dr. Karen Wright, D.V.M., FSIS Slaughter Inspection, "Improved methods of raising and advances in animal science have resulted in fewer diseased flocks. Less than 2 percent of turkeys inspected must be rejected." After approval, they start their journey through the plant.

A greater number of birds are inspected from the beginning of October until the end of the year than at any other time, said Doris Pifer, a USDA inspector in Pennsylvania. "This time of the year is the most stressful for the inspectors and the plant workers."

To meet the increased demand for whole turkeys, the plants will decrease their production of turkey parts. Plants operate 6 days a week instead of 5. Shifts may be extended beyond the normal 8 hours or the plant may decide to run a second shift. Another option is the use of seasonal plants, small facilities utilized during November and the first few

weeks in December.

No matter which route the plant takes, USDA inspectors are closely involved and inspect all the birds before they leave the plant on their way to your table.

Once in the plant, the bird and the internal organs are carefully checked by USDA inspectors for visible signs of disease. Any questionable birds are pulled off the line for further scrutiny by a USDA veterinarian.

After a washing, they then proceed through a chill tank where the internal temperature of the turkey is brought down to 40° F to prevent bacterial growth and spoilage. Finally, the birds are sorted by weight, graded and continue through the system either whole or as parts. Turkeys that will be sold frozen are quickly put into freezers set at -10° F. Turkeys that will be sold fresh are quick-chilled to below 40° F.

Throughout this processing are various quality control checks instituted by the plants and monitored by the USDA inspectors. Turkey producers, like all food producers, want to provide consumers with the best product possible. Staying in business depends on it.

\*Registered Dietitian

### **From Plant to Store.**

Once the turkeys are inspected and packaged, they are shipped in refrigerated trucks to warehouses where they await distribution to stores. The temperature in the warehouses is strictly monitored to ensure that no spoilage occurs. Temperature control is vital for raw poultry products.

Some of the warehouses are owned by processors, some by food brokers and some by large grocery store chains.

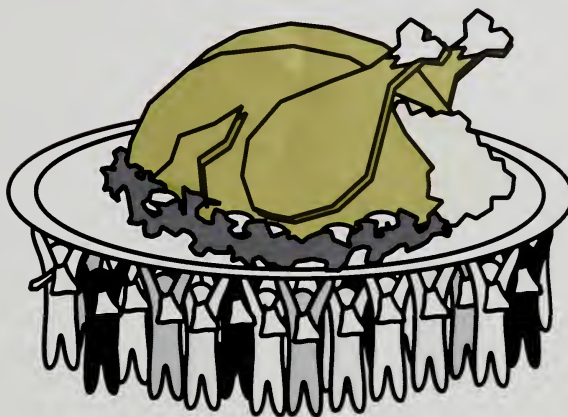
Beginning the second week in November, grocery stores will start receiving daily deliveries of both fresh and frozen turkeys.

While grocery stores have facilities for maintaining fresh turkeys at 28° to 32° F, your home refrigerator, set at 40° F, may not keep a fresh turkey from spoiling for more than two days. If you want a fresh turkey, place your order with the meat manager or butcher who will hold it until you pick it up Thanksgiving week.

### **Finally, to the Table.**

As the other guests are scrambling for drumsticks, those hardworking individuals who helped get the turkeys to the tables can relax and take a moment to congratulate themselves on keeping a 370-year-old turkey tradition alive. ■

## **Turkey Stats**



### **How many Americans eat turkey for Thanksgiving dinner?**

It is estimated by the National Turkey Federation that 90 percent, or 225 million Americans, eat turkey on Thanksgiving.

### **How many turkeys are consumed on Thanksgiving Day?** A whopping 45 million.

### **How many turkeys were consumed in 1990?**

The National Turkey Federation estimates 283,000,000 birds, which continues a seven-year upward trend.

### **How much turkey do Americans eat each year?** In 1990, each person ate 18.5 pounds.

### **What is the largest turkey ever produced?**

According to the National Turkey Federation, in 1967, the Jerome Foods company raised a 75-pound turkey.

### **What is the most common question about turkey received on USDA's Meat and Poultry Hotline?**

*Is the uncooked turkey I had in my freezer from last Thanksgiving still safe to eat this Thanksgiving?*

The answer is yes.

# The Food Science of Freezing

by CiCi Williamson, C.H.E.\*

**F**oods in the freezer—are they safe? Last year some 5,500 callers to the USDA Meat and Poultry Hotline weren't sure about the safety of items stored in their own home freezers.

The confusion seems to be based on the fact that few people understand how freezing protects food. They think the recommended storage times they see for frozen items relate to safety rather than quality.

Actually food stored at 0° F will nearly always be safe. Only the quality suffers with lengthy freezer storage.

Freezing keeps food safe by slowing the movement of molecules, causing foodborne illness microbes to enter a dormant stage. It's similar to how extreme cold can prevent mechanical equipment from functioning and why a car may not start in sub-zero temperatures.

"Freezing preserves food for extended periods because it prevents the growth of microorganisms that cause both food spoilage and food-borne illness," said Brad Berry, research food technologist at USDA's Agricultural Research Service.

Berry explained that freezing inactivates any microbes—bacteria, yeasts and molds—present in food. Once thawed, however, these microbes will again become active. Since they will then grow at about the same rate as microorganisms on fresh food, you must handle thawed items as you would any perishable food.

## How freezing affects food quality

While freezing may keep food safe almost indefinitely, it does affect quality. Tenderness, flavor, aroma, juiciness and color of frozen foods can all be affected.

How well food emerges from freezing depends on how well you understand and compensate for the following factors.

**1. Freshness and quality at time of freezing affect the condition of frozen foods.** Foods frozen at peak quality emerge tasting better than foods frozen near the end of their useful life. So freeze items you won't use quickly sooner rather than later.

Fortunately, the freezing process itself is not destructive of nutrients, and, as to meat and poultry products, there is little change in protein value during freezing.

However, freezing only slows the enzyme activity that takes place in foods. Enzymes present in animals, vegetables and fruit promote chemical reactions, such as ripening, in living things. These reactions also continue after harvesting.

Enzyme activity does not harm frozen meats or fish and is neutralized by the acids in frozen fruits. Most vegetables that freeze well, however, are low acid. They require a brief partial cooking to halt enzyme activity that can lead to their deterioration. This is called "blanching."

For successful freezing, blanch or partially cook vegetables in boiling water or in a microwave oven. Then

rapidly chill the vegetables prior to freezing and storage. Consult a cookbook for detailed instructions.

**2. Proper packaging helps prevent "freezer burn" and protects flavors.** Freezer burn appears as grayish-brown leathery spots on frozen food. It occurs when air reaches its surface. Although undesirable, freezer burn does not make the food unsafe, merely dry in spots. Cut it away either before or after cooking the food.

Supermarket meat wraps, while safe for freezing, are permeable to air. Over time, this contributes to freezer burn and rancidity, when fats and oils develop an off-taste and odor.

For extended storage, overwrap these packages with airtight heavy-duty foil, plastic wrap and bags, or freezer paper as you would any food to be frozen. Do not rely on waxed paper. Freeze unopened vacuum packages as is.

When freezing food in plastic bags, push all the air out before sealing. Residual air can change into ice crystals and cause fats to become rancid.

**3. Freeze food as fast as possible to maintain its quality.** Ideally, a food 2-inches thick should freeze completely in about 2 hours. If your home freezer has a "quick-freeze" shelf, use it. And, regardless, arrange packages in one layer until frozen.

Rapid freezing prevents undesirable large ice crystals from forming because the molecules don't have time to take their positions in the characteristic six-sided snowflake.

Slow freezing creates large disrup-

\*Certified Home Economist



tive ice crystals. During thawing, they damage the cells and dissolve emulsions. This causes meat to "drip"—lose juiciness. Emulsions such as mayonnaise or cream will separate and curdle.

**4. The lower the storage temperature and briefer the time stored, the better the quality and nutrient retention will be.** Store all foods at 0° F or lower to retain vitamin content, color, flavor and texture.

**5. Color changes can occur in frozen foods.** The bright red color of meat as purchased may turn dark or pale brown depending on its variety. This may be due to freezer burn or abnormally long storage.

Freezing doesn't usually cause color changes in poultry. However, bones and the meat near them can become dark. Bone darkening results when pigment seeps through the porous bones of young poultry into the surrounding tissues when frozen and thawed.

The dulling of color in frozen vegetables and cooked foods is usually the result of excessive drying due to improper packaging or over-lengthy storage.

### **Defrosting Frozen Foods**

When defrosting frozen foods, it's best to plan ahead for slow, safe thawing in the refrigerator. Never leave foods out on the counter at room temperature.

A large frozen item like a turkey requires at least a day for each 5 pounds of weight to thaw in a refrigerator kept at 40° F. Most foods of any size will require a day. There is no need to cut it close. Once food thaws in the refrigerator, it's still safe to store for a day or two before using.

Procrastinators who have failed to allow sufficient time to defrost foods in the refrigerator can fall back on two methods—the cold water method and microwave defrosting.

When using cold water to aid defrosting, be sure the food is in a leak-proof package or put it inside a plastic

bag. If water contacts the food itself, harmful bacteria could be introduced into the food. Tissues can also absorb water like a sponge, resulting in a watery product.

Immerse the bag in cold water. Check the water frequently to be sure it stays cold. Bacteria can multiply rapidly at room temperature. After thawing, refrigerate the food until ready to use.

When microwave defrosting food, plan to cook it immediately afterward. Some areas of the food may become warm during microwaving, permitting the growth of bacteria in those areas.

*Once food is thawed in the refrigerator, it is safe to refreeze it without cooking although there may be a loss of quality.* Foods defrosted in the microwave or by the cold water method should be cooked before refreezing.

To keep your holiday food at top quality, follow the freezer storage times in the accompanying chart. ■

### **References**

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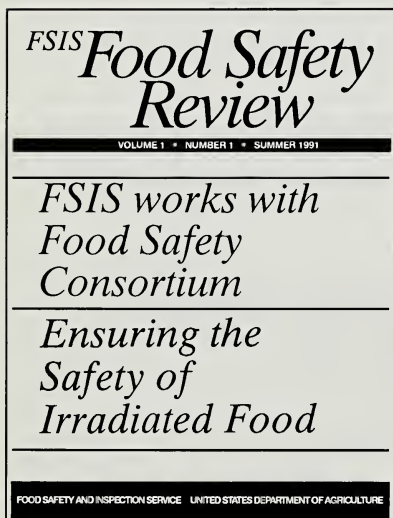
## **Freezer Storage Chart at 0° F**

<b>Item</b>	<b>Months</b>	<b>Item</b>	<b>Months</b>
<b>Meat, Poultry and Eggs</b>		<b>Side Dishes</b>	
Bacon and Sausage	1-2	Cranberries, fresh	12
Egg whites or egg substitutes	12	Pasta, cooked	1-2
Gravy, meat or poultry	2-3	Rice, cooked	1-2
Ham, Hotdogs and Lunchmeat	1-2	Stuffing or dressing	1-2
Meat, roasts uncooked	9	Vegetables	8
Meat, chops or steaks	4-12		
Meat, ground	3-4	<b>Desserts and Breads</b>	
Meat, cooked	2-3	Cake	3
Poultry, whole uncooked	12	Cookies	8
Poultry, parts uncooked	9	Bread and rolls, baked	3
Poultry Giblets, uncooked	3-4	Bread dough, unbaked	1
Poultry, ground uncooked	3-4	Fruitcake	12
Poultry, cooked	4-6	Ice cream or sherbet	2
Soups and Stews	2-3	Pies, baked	2
Wild game, uncooked	8-12	Pies, pumpkin unbaked	2
		Pies, fruit unbaked	8
<b>Dairy Products</b>			
Milk	1		
Cheese, hard	4		
Butter	9		

## NEWSWIRES

### Introducing the FSIS Food Safety Review

By now you may already have seen the first issue of the new Food Safety and Inspection Service (FSIS) magazine for food science and public health professionals, the *Food Safety Review*.



FSIS is the USDA agency that inspects meat and poultry and directs public education on safe food handling.

"The aim of *Food Safety Review* is to explain how science is being utilized to continually improve meat and poultry inspection," said editor Jacque Lee. An initial free circulation of about 2,500 is planned for the quarterly.

Articles in the first issue address the control and prevention of food-borne illness caused by the campylobacter bacteria, a review of research FSIS is currently conducting through the new Food Safety Consortium, which involves Iowa State, Kansas State and the University of Arkansas, and other research topics.

"FSIS researchers who contribute

to other professional journals will be encouraged to publish in our magazine," said editor Lee. Writers will include staff veterinarians, microbiologists, food scientists and science writers.

Lee, previously with USDA's Agricultural Marketing Service and a former Congressional staffer, will have Dale Blumenthal as her associate editor. Ms. Blumenthal is a former staff writer for the *FDA Consumer* magazine.

Those who wish to be placed on the *Food Safety Review* mailing list should write the FSIS Information Office, USDA, 14th and Independence, Room 1160-South, Washington, D.C. 20250. Or you can fax a request to Editor-FSR, 202-475-5460. Give your name, address and professional affiliation.

—Mary Ann Parmley

### New "Probe" Tests Pinpoint Drug Residues in Meat and Poultry

Scientists with USDA's Agricultural Research Service (ARS) are developing new probes that could speed up testing of meats and poultry for a class of veterinary drugs called benzimidazoles.

Ranchers use these drugs to protect animals from harmful parasitic worms.

The tests could streamline testing of beef, lamb, pork, chicken and goat meat for benzimidazole residues, according to Dr. David L. Brandon, test developer and research chemist at ARS's Western Regional Research Center, Albany, Calif.

To date, Brandon has tests for 4 of 8 benzimidazoles covered by routine USDA monitoring. He hopes to have tests for the 4 other drugs within a year.

Currently, meat and poultry samples must be shipped away for laboratory analysis. "If the probes can be packaged as a quick test for in-plant use by USDA's Food Safety and Inspection Service inspectors, the

advantage would be that testing would be much more efficient," said Brandon.

The probes are based on the use of monoclonal antibodies. Laboratory mice, injected with a single benzimidazole, produce antibodies to protect their bodies from the foreign substance. Those mouse antibodies which are a response to that specific drug are collected and used to create the antibody probes.

The probes are then used in color-reaction tests to tell if any worm medicine residues are present in samples of meat or poultry. A chemical that is part of the test kit causes a color change in the sample if the mouse antibodies locate and bond to any benzimidazole residues.

Similar probe tests could also speed screening for benzimidazole residues in fresh produce. Growers use one type of the drug to protect crops like oranges, strawberries, apples, pears and mushrooms from harmful fungi.

For further information, contact Dr. David Brandon, Western Regional Research Center, Albany, Calif. Phone: 1-415-559-5783.

—Liz Lapping

### Ft. Worth Meeting Produces a Model HACCP Production Plan for Cooked Sausages

Old Ft. Worth, Texas, home of the 1902 stockyards that helped usher in the modern era in meat production, hosted another pioneering effort for meat producers recently. USDA's Food Safety and Inspection Service sponsored a May workshop there to produce a model HACCP plan for cooked sausage products. Cooked sausages are better known as hot-dogs, bologna and knockwurst.

What is a HACCP plan? HACCP-based inspection, now widely recognized as the state-of-the-art approach to food production, is based on risk analysis. In other words, you analyze your production set-up and identify those "risk" points at which things





*Vos and Sveum in Ft. Worth*

might go wrong that could render the food unsafe. When you have systems in place to eliminate those risks, you have a working HACCP plan. The acronym is pronounced "hassip."

"HACCP is the most forward-looking inspection system presently available to ensure the safety of meat and poultry products," said Food Safety and Inspection Service (FSIS) administrator Dr. Lester M. Crawford.

The some 40 industry representatives who worked four days to develop the new plan agreed that HACCP is the wave of the future.

"Product safety is the number one priority in food production," said Bill Sveum, manager of product safety with Oscar Mayer foods, "and HACCP will help ensure that."

Another industry participant, Roger Vos, in corporate quality control at Hormel, summed up the feelings of many workshop participants when he said, "I'm interested in the comprehensive HACCP approach because anything that increases consumer confidence is good for the meat and poultry industry."

The Cooked Sausage HACCP plan is the second in a series of five model plans FSIS will devise. A model plan for refrigerated foods was developed last spring in Baltimore. As the model plans are developed they will be tested in volunteer plants.

—Mary Ann Parmley

## ENFORCEMENT ACTIONS

The Food Safety and Inspection Service (FSIS) Compliance Program investigates violations of federal meat and poultry inspection laws. Those products found in violation can be seized, detained or voluntarily recalled. These include products with false or misleading labeling information or those found to contain ingredients not listed on the label. Companies that violate the law are subject to criminal, administrative or civil penalties. Here are some recent actions:

**PRODUCT:** Cooked sausage products.  
**COMPANY:** State Sausage Corp., Detroit, Mich.  
**VIOLATION:** Preparing, selling and transporting adulterated and misbranded product. Adding poultry and/or pork to beef products.  
**ACTION:** Company fined \$10,000. Thomas Lugosi, company president, ordered to perform 100 hours of community service.

**PRODUCT:** Ground beef.  
**COMPANY:** Prestige Foods, Bronx, N.Y.  
**VIOLATION:** Preparing, transporting and selling adulterated and mislabeled ground beef. The company mixed partially defatted chopped beef with 2,567 pounds of ground beef, with the intent to defraud.  
**ACTION:** Company and firm's owner, Antonio Scandifio, fined \$2,500.

**PRODUCT:** Various meat and poultry products.  
**COMPANY:** Prime Poultry Corp., Boston, Mass.  
**VIOLATION:** Causing 23,000 pounds of product to become adulterated because of insanitary conditions at the plant.  
**ACTION:** Firm and company president, Norman Talcofsky, fined a total of \$45,300. The president was also placed on three years' probation.

—Herb Gantz



A public service announcement of this publication and the U.S. Department of Agriculture

## Don't Play Games With Your Holiday Bird

For advice on safe handling, storage and preparation of turkey and other meat and poultry products, call the USDA Meat and Poultry Hotline  
 1-800-535-4555

- Monday-Friday, Nov. 1-30, 9-5, EST
- Saturday-Sunday, Nov. 23-24, 9-5, EST
- Thanksgiving Day, Nov. 28, 8-2, EST
- Monday-Friday, Year-round, 10-4, ET



## In the Winter Issue

# Food Safety — Focus on Children



From youngsters in daycare to latchkey kids to teenagers, a number of issues are surfacing with respect to food safety and our nation's children.

What are they? Experts report growing concerns with preventable foodborne illness in daycare centers. Latchkey kids need easy-to-follow rules on proper refrigeration and microwaving, and older children and teenagers need guidance in their new role as family shoppers and meal preparers. This and MORE coming up.

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